INTRODUCTION
The rotational anomalies of kidneys can result in varying degrees of obstruction of the renal moieties, with an increased prevalence of stone formation and infection.\textsuperscript{1} Crossed fused renal ectopia refers to a kidney that has crossed from the left to the right side (or vice versa) so that both kidneys are located on the same side of the body and fused together. Renal ectopia is frequently associated with congenital abnormalities of other organ systems.\textsuperscript{2} The function of the kidney itself is generally not abnormal to begin with, but because of the change in the usual anatomic relationships, the kidney may have difficulty in draining. Upto 50\% of ectopic kidneys are at least partially blocked. Over time, obstruction can lead to serious complications, including urinary tract infections, kidney stones and kidney failure. The incidence of crossed fused ectopia is 1-1000.\textsuperscript{3} This case report described crossed fused renal ectopia in a young adult male, complicated by staghorn calculus and gross hydronephrosis.

CASE REPORT
A 25-year-old male patient presented in the radiology department for intravenous pyelography (IVU). He had history of right renal colic and haematuria. The patient was a healthy looking male. His abdominal examination revealed tenderness in the right renal area and an enlarged right kidney could be palpated. There was no tenderness or mass in the left renal area. His plain X-ray KUB (Kidneys and Urinary Bladder) revealed a large staghorn calculus in the right kidney and a jack stone with spikes adjacent to the staghorn calculus. The right kidney was laterally and superiorly placed from its expected location close to lumbar spine. In addition, no normal soft tissue shadow of left kidney was seen in left renal area. His lumbar spine was normal in appearance and there was no scoliosis or any spinal dysraphism. Injection of contrast agent urografin (80 ml) was given intravenously and post-contrast films of IVU series were taken. The initial 5 minutes film revealed the left kidney crossed over to the right side and fused with the lower pole of right kidney. Fusion occurred along the longitudinal aspect, with the kidneys side by side. The result was, with a sigmoid or S shape of the renal fusion mass (Figure 1). The crossed kidney was malrotated also as its renal pelvis was laterally situated from which ureter was arising. This kidney was normally functioning with no evidence of hydronephrosis or hydroureter. Its ureter was crossing over to the left side in front of the fifth lumbar vertebra and left sacral ala and was inserting into the left ureterovesical junction. A normal caliber right ureter was also seen arising from the upper right kidney and had normal course upto the right ureterovesical junction. A large staghorn calculus was seen within the right sided pelvicalyceal system. However, delayed films revealed a large rounded contrast filled cavity at the upper pole of this kidney. This was grossly hydronephrotic upper pole of the kidney and was opacified densely on delayed films (Figure 2). Ultrasonography of the kidneys and bladder showed a single renal structure in the right flank, with poor cortico-medullary differentiation and markedly dilated upper pole collecting system that was eccentrically positioned within the kidney implying obstruction in the upper collecting system. There was difference in the orientation of the two collecting systems in the fused kidneys, and absence of a kidney in the contralateral

ABSTRACT
Crossed fused renal ectopia is a rare renal anomaly. Formation of staghorn and struvite calculi within it has never been reported in local literature. A 25-year-old man with macrohemaeturia and right flank pain was admitted to the hospital. An intravenous pyelography revealed right sided crossed fused ectopic kidney showing a staghorn and struvite calculus in upper-moiety along with gross hydronephrosis. Patient was conservatively managed after exclusion of other congenital anomalies.

Key words: Crossed renal ectopia. Staghorn calculus. Hematuria. Intravenous pyelography.
renal fossa, or elsewhere in the body, such as the pelvis. Urinary bladder was normal. His liver, spleen, pancreas and gallbladder were normal sonographically. Blood urea was 5 mmol/L and serum creatinine was 79 mmol/L.

A final diagnosis of crossed fused renal ectopia with large staghorn calculus and grossly hydronephrotic upper pole was given and patient was referred back to the urology department.

Patient was managed conservatively with intravenous fluids, intravenous antibiotics including ceftriaxone 1 gm twice daily and analgesics. The pain settled with this treatment. Presently, patient is living without symptoms and has not consulted further.

**DISCUSSION**

Crossed fused renal ectopia is a congenital malformation that is present at birth. The patient's age at diagnosis varies depending on the secondary symptoms and complications. In the absence of associated complications and symptoms, the condition may be incidentally discovered on images obtained for reasons other than the evaluation of crossed fused kidneys. Many cases of crossed fused renal ectopia remain undiagnosed, although the exact number is unknown. A deformed kidney that results from a neoplasm or previous trauma in conjunction with the congenital absence of the contralateral kidney may be mistaken for crossed fused renal ectopia. Nonfunctioning of one of the fused renal units (e.g. as a result of obstruction) may cause crossed fused ectopia to be missed. Upto 50% of ectopic kidneys are at least partially blocked. Overtime, obstruction can lead to serious complications, including urinary tract infections, kidney stones and kidney failure. Both staghorn and spiked calculi were seen in this case. Staghorn calculus is usually composed of struvite. Urinary tract stones composed of calcium oxalate dihydrate can assume a spiked configuration, resembling a child's toy jack.²

Refluxing ureter, renal dysplasia and renal cell carcinoma have also been described earlier in association with crossed fused renal ectopia.²⁻⁶ A case of crossed renal ectopia with renal stone has also been reported from Japan.⁷ On ultrasonograms, overlying abdominal gas may obscure a portion of the fused kidneys, making precise diagnosis difficult. This diagnosis should be considered when two separate kidneys cannot be identified. The sonographic appearance of this entity consists of a characteristic anterior and/or posterior notch, difference in orientation of the collecting systems in the fused kidneys, and absence of a kidney in the contralateral renal fossa, or elsewhere in the body, such as the pelvis.⁸

Review of literature showed only 6 cases of stone disease treated in crossed renal ectopic kidneys. The anomalous position of kidneys and abnormal disposition of arterial supply pose a different surgical challenge, requiring a careful definition of renal outlines by nephrotomogram or contrast enhanced computerised scans, mapping of vasculature by arteriography and collecting system with drainage pattern by cystoscopy and bilateral ureteropyelography.⁹

**REFERENCES**


